

Serial No. 09/782,532
Reply to Office Action of October 31, 2005

REMARKS/ARGUMENTS

Claims 1, 3-10, 12-21, 23, 24, 26-28, 33-37, 39-46 and 48-54 were presented for examination. Claims 1, 3-10, 12-21, 23, 24, 26-28, 33-37, 39-41, 44-46 and 48-54 remain pending in this application. In an Official Final Office Action dated October 31, 2005, claims 1, 3-10, 12-21, 23, 24, 26-28, 33-37, and 39-46 and 48-54 were rejected. The Applicants thank the Examiner for his consideration and thoughtful remarks. The Examiner's comments concerning the claims pending in this application are addressed below.

Applicants herein amend claims 1, 21, 26, 33 and 44 and respectfully traverse the Examiner's prior rejections. Claims 42 and 43 are canceled without prejudice and no new claims are presently added. These changes are believed not to introduce new matter and are done to place the claims in a better position for appeal. Accordingly, the entry of the above-referenced amendments is respectfully requested. The claims have been amended to expedite the prosecution and issuance of the application. In making this amendment, Applicants have not and are not narrowing the scope of the protection to which the Applicants consider the claimed invention to be entitled and do not concede, directly or by implication, that the subject matter of such claims was in fact disclosed or taught by the cited prior art. Rather, Applicants reserve the right to pursue such protection at a later point in time and merely seek to pursue protection for the subject matter presented in this submission.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and withdraw them.

Serial No. 09/782,532
Reply to Office Action of October 31, 2005

I. Claims 21, 23, 24, 28, 44-46, and 48-50 stand rejected under 35 U.S.C. 102(e) as anticipated by Carter.

The Examiner asserts that the Applicants have failed to establish that the Applicants' invention teaches away from Carter with respect to whether or not stored data could be accessed from more than one node upon failure or unavailability of any given instance of a storage management process. The Applicants respectfully disagree. Carter discloses a system making shared memory available through a "shared memory subsystem" component in each node. As recognized by the Examiner, a failure of any shared memory subsystem will render the portion of the shared memory allocated to that node and the data stored therein unavailable. In contrast, claim 21 calls for storage management process instances that are distributed across the network-accessible devices such that failure or unavailability of any given instance of a storage management process instance will not impact the availability of stored data. Furthermore, claim 21 recites that in the event of failure, reconstruction can be implemented in parallel across multiple instances of the storage management process. The result is a reconstruction of an entire node at an alternate node or, in a preferable implementation, the data on the lost node being reconstructed on a plurality of pre-existing nodes elsewhere in the system. This approach clearly teaches away from Carter that renders portions of the shared memory unavailable.

For at least these reasons claim 21 is not anticipated by Carter. Claims 23, 24 and 28 that depend from claim 21 are allowable over Carter for the same reasons as claim 21 from which they depend.

As stated in a previous response, independent claim 44 states that the storage management processes are configured to migrate data amongst the storage devices using the storage messages preemptively when a fault condition

Serial No. 09/782,532
Reply to Office Action of October 31, 2005

in at least one of the storage devices is determined to be likely. The Examiner responds that such an action is inherent in the teachings of Carter and points out that since a user of Carter's system may anticipate fault conditions, the Applicants' invention is not novel. The Applicants disagree. Carter discusses fault tolerance and data migration, but does not show or suggest any recognition system capable of migrating data in response to a determination by the system that a fault condition is likely. Carter does not discuss determining the likelihood of a fault condition. Carter appears to migrate data irrespective of the likelihood of a fault condition. In contrast, the Applicants' invention migrates data amongst the storage devices when a fault condition in at least one of the storage devices, as determined by the storage management processes, is likely. For at least these reasons claim 44 and claims 45-46 and 48-50 that depend from claim 44 are not anticipated or made obvious by Carter.

Based on the above remarks, Applicants respectfully request that the rejection of claims 21, 23, 24, 28, 44-46 and 48-50 be withdrawn.

II. Claims 1, 3-10, 12-20, 26, 52 and 53 stand rejected under 35 U.S.C. 103(a) as unpatentable over Carter in view of allegedly admitted prior art.

The rejection of claims 1, 3-10, 12-20, 26, 52 and 53 continues to rely explicitly on Applicants' own teaching to form a rejection under 35 U.S.C. 103. The office action acknowledges that Carter does not show storage management processes implementing a RAID-type distribution across the plurality of network-accessible devices as called for in claim 1. To alleviate this insufficiency, the Examiner turns to the Applicants recognition of a problem present in the prior art and manipulates the expression to convey an illusory meaning for the Examiner's own purpose.

Serial No. 09/782,532
Reply to Office Action of October 31, 2005

Applicants do not admit that the statements in Applicants' specification setting out the problem that they recognized in the prior art are admitted prior art. Nor do the Applicants agree with the Examiner's assertion that the Applicants' statement disclose "conventional" teachings. The statements cited at page 3, lines 10-15 of the application reflect the Applicants' own recognition of the problems to be solved and benefits to be achieved by the present invention. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. 103 be withdrawn.

Moreover, any rejection under 35 U.S.C. 103 requires that there be sufficient motivation to combine the teachings of the various references. This motivation must come from the prior art itself. The Office Action clearly admits that the motivation to combine is provided exclusively by the alleged admitted prior art and, in this manner, uses Applicants' own teaching of the problems of the prior art against them. It is well settled that Applicants' own teaching cannot be used in this manner.

In addition to the legal insufficiency of the stated rejection, Carter does not show or suggest all the elements of claim 1. Claim 1 calls for, among other things, a data storage system wherein processes for storing data comprise processes that implement a RAID-type distribution across the plurality of network-accessible devices wherein RAID-type distribution involves executing data write operations to both primary and mirror nodes. Despite the Examiner's sweeping conclusion that Carter suggests replication of data at different nodes based on two separate statements, the fact remains that Carter does not disclose a replication as recited in claim 1 nor is there any documentable evidence in Carter that supports such a conclusion. The rules in establishing a *prima facie* case of obviousness are clear. The prior art reference (or references when combined) must teach or suggest all the claim limitations.

Serial No. 09/782,532
Reply to Office Action of October 31, 2005

Moreover, replicating data is not the same as RAID-type distribution as called for in claim 1. The term "RAID-type distribution" carries its ordinary meaning, as set out at page 28, lines 9-11, and involves executing every data write operation to a primary node and all mirror nodes. The Applicants reiterate that replication is conventionally thought of as copying data from one memory location to another. Carter's description of replication at column 17, lines 31-35 is consistent with copying of memory space that is performed asynchronous to a write operation, and so is not a "RAID-type distribution" as recited in the claim or interpreted by the Examiner.

Carter's system makes the shared memory available through a "shared memory subsystem" component in each node. As recognized by the Examiner, failure of any shared memory subsystem in Carter's system will render the portion of the shared memory allocated to that node and the data stored therein unavailable. Claim 1 calls for storage management process instances that are distributed across the network-accessible devices such that failure or unavailability of any given instance of a storage management process instance will not impact the availability of stored data. And that in the event of failure reconstruction can be implemented in parallel across multiple instances of the storage management process. The result is a reconstruction of an entire node at an alternate node or, in a preferable implementation, the data on the lost node being reconstructed on a plurality of pre-existing nodes elsewhere in the system. This element of claim 1 is not shown or suggested by Carter.

Claims 3-10, 12-20, 26, 52 and 53 are distinct with respect to Carter for at least the same reasons as claim 1. With respect to the Examiner's argument that rejects claims 12-15 based on Appellants' own teaching, the Applicants' reiterate the legal insufficiency of this argument as presented herein and traverse its legitimacy.

Serial No. 09/782,532
Reply to Office Action of October 31, 2005

Based on the above remarks, Applicants respectfully request that the rejection of claims 1, 3-10, 12-20, 26, 52 and 53 be withdrawn.

III. Claims 33-37 and 39-41 stand rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,987,506 ("Carter") in view of U.S. Patent 6,122,754 ("Litwin").

Claim 33 calls for, among other things, identifying two or more storage devices at different network locations,...determining parity data for the data to be stored,...and storing the data and/or parity data using a RAID-type distribution across the two or more storage devices, wherein RAID-type distribution involves executing data write operations to both primary and mirror nodes. Carter, alone or in combination with Litwin, does not show these features of claim 33.

As set out above, Carter shows, at most, replication of data from memory and caching, neither of which are fairly construed as RAID-type distribution that involves write operations to both primary and mirror nodes. Although Litwin shows conventional parity operations, there does not appear to be any suggestion that data, including parity data, should be stored using a RAID-type distribution across two or more storage devices.

For at least these reasons, claim 33 is not shown or suggested by Carter in view of Litwin. Claims 34-37 and 39-41 are allowable for at least the same reasons as claim 33 as well as the distinguishing limitations appearing in those dependent claims.

IV. Claims 42-43 stand rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,987,506 ("Carter") in view of U.S. Patent 6,199,099 ("Gershman").

Claims 42 and 43 are believed to be distinct over Carter for the reasons stated in the August 3, 2004 response. Specifically, Independent claim 42 calls

Serial No. 09/782,532

Reply to Office Action of October 31, 2005

for providing a plurality of network accessible storage devices and "monitoring the data storage for faults" with storage management processes by having at least a portion of the plurality of network accessible storage devices transmitting heartbeat messages. As noted in the Office Action, Carter does not teach monitoring the devices. While Gershman is relied on to show a heartbeat message, Gershman does not supply the basic deficiency of Carter in that Gershman does not teach or suggest monitoring a plurality of network accessible storage devices using the heartbeat message. There is no teaching in the combined references that would lead one to modify Carter to include a heartbeat message. Nothing in Gersman suggests that a heartbeat message can or should be transmitted by storage devices to monitor the data storage devices for faults. The motivation stated in the Office Action comes from Applicants' own disclosure, not the references.

Based on the above remarks, Applicants request that the rejection of claims 42 and 43 be withdrawn.

V. Claim 51 stands rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,987,506 ("Carter") in view of U.S. Patent 5,794,245 ("McClain").

Claim 51 depends from claim 44 and is believed to be distinct with respect to Carter for the same reasons as claim 44. McClain does not supply the deficiencies of Carter. Specifically, McClain does not show or suggest "storage management processes are configured to migrate data amongst the storage devices using the storage messages preemptively when a fault condition in at least one of the storage devices is determined by the storage management processes to be likely." For at least these reasons, claim 54 is believed to be allowable over the relied on references either alone or in combination.

Serial No. 09/782,532
Reply to Office Action of October 31, 2005


VI. Conclusion.

In view of all of the above, claims 1, 3-10, 12-21, 23, 24, 26-28, 33-37, 39-41, 44-46 and 48-54 are now believed to be allowable and the case in condition for allowance which action is respectfully requested. Should the Examiner be of the opinion that a telephone conference would expedite the prosecution of this case, the Examiner is requested to contact Applicants' attorney at the telephone number listed below.

No fee is believed to be required by this response. Any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Respectfully submitted,

6 December, 2005



Michael C. Martensen, No. 46,901
Hogan & Hartson LLP
One Tabor Center
1200 17th Street, Suite 1500
Denver, Colorado 80202
(719) 448-5910 Tel
(303) 899-7333 Fax